EPA United States Environmental Protection Agency

January 18, 2013

Workshop Description and Agenda
Restoring Salmon Habitat for a Changing Climate
In the South Fork Nooksack River, WA

EPA Region 10 Climate Change and TMDL Pilot
Cosponsored by EPA and the Nooksack Indian Tribe
January 22 and 23, 2013 | 8:30 AM to 4:30 PM

Location:
DOE Bellingham, WA

Project Description

The Environmental Protection Agency (EPA) Region 10 and Washington State Dept of Ecology are conducting a Temperature Total Maximum Daily Load (TMDL) for the South Fork Nooksack River (SFNR) in coordination with the Nooksack Tribe. In addition to this Regulatory Requirement, Region 10 has partnered with EPA's Office of Research and Development (ORD) and Office of Water (OW) and together initiated a Pilot Research Project to consider how projected climate change impacts for the SFNR could be incorporated into the TMDL and influence salmonid habitat restoration plans that address climate change impacts. EPA is using a "parallel study strategy" to concurrently accomplish the Research Objective (EPA Region 10 Climate Change TMDL Pilot) and Regulatory Requirement (SFNR, WA Temperature TMDL). This allows EPA to "learn by doing." The goal of the Pilot Research Project is to (1) provide input to the Regulatory TMDL for additional modeling runs that can capture climate change scenarios, (2) guide restoration planning taking climate change into consideration that will maintain suitable salmonid habitat, and (3) to serve as an example of process and analysis for other TMDLs.

The Research Objective is separated into two assessments processes—one quantitative and one qualitative.

The quantitative assessment is directly responsive to the CWA TMDL Numeric Cold-Water Temperature WQS. The quantitative assessment is the comparison of QUAL2Kw modeled stream temperatures, including riparian shading, with and without climate change for the 2020s, 2040s and 2080s. This will also involve comparing projected increases in stream temperature with the thermal tolerances and requirements of various salmonids.

The qualitative assessment is a comprehensive analysis of climate change impacts on freshwater habitat and an evaluation of the effectiveness of restoration tools in the SFNR. The output of this assessment is a set of recommendations that will inform development of the TMDL, updates to the Salmon Recovery Plan, and other land use and restoration planning efforts. Although quantitative methods are used in this assessment, there is no attempt to directly attribute the quantitative contribution of these stream restoration actions on meeting the CWA TMDL Numeric Cold-Water Temperature WQS.

Taken together, the quantitative and qualitative assessments represents the most robust and comprehensive actions to protect the CWA designated uses (salmon habitat) and ESA recovery goals under climate change as well as incorporate climate change into salmon recovery and watershed restoration efforts.

Workshop Description
This Workshop supports the qualitative assessment that is being conducted as part of the Research Objective. It is based on the recent article "Restoring Salmon Habitat For A Changing Climate" (Beechie et al., 2012). The Workshop is presented over two days. Day One is devoted to a series of presentations and panel discussions to understand how landscape watershed processes and climate change will impact salmonids in the SFNR and a discussion of existing restoration tools applied in the SFNR watershed. Day Two is focused on a review of the existing ESA Salmon Recovery Plan, data sets and related studies, application of Beechie et al.'s (2012) method for evaluation of salmon recovery strategies in the face of climate change, and to support the development of the step-by-step methodology for the qualitative assessment in the SFNR.

Previous Workshop and Meeting Description
A Workshop was held on June 25, 2012 at EPA Region 10 in Seattle, WA to involve Environmental Practitioners and Policy Makers (Federal, Tribal, State, Local & NGO) in the development of a Climate Change Risk Assessment/Management (Vulnerability/Adaptation) Research Pilot. The Workshop Agenda and Presentations are available on the EPA Internet Site at:
http://www.epa.gov/wed/pages/whatsnew.htm

On October 4, 2012, a project scoping meeting was held with members of Washington's Water Resources Inventory Area Number 1 (WRIA 1) Salmon Recovery and Watershed Management Staff Teams, and other interested parties (workshop participants). The purpose of the meeting was to brief the team on the EPA Region 10 Climate Change and TMDL Pilot and to solicit input on issues, concerns and opportunities to improve the scope and effectiveness of the project. Workshop participants recommended implementing Task 3 (*Qualitative Assessment*) as a *rapid-prototype pilot*. Specifically, these recommendations included: (1) developing an assessment methodology based on *Restoring Salmon Habitat For A Changing Climate,* Beechie et al. 2012 and (2) leaving open the possibility of another follow-on project to "refine the assessment methodology" and/or "scale to a larger landscape", possibly for the entire Nooksack River Basin or WRIA 1.

For questions or more information on this workshop contact:
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Day 1 Agenda –January 22, 2013- Presentations And Context, Restoring Salmon Habitat For A Changing Climate In the South Fork Nooksack River, WA

Time	Session Title/Time/Person
8:30 a.m.–9:00 a.m.	***Welcome and Day 1 Workshop Overview***
	Welcome (8:30–8:40 a.m.) *Oliver Grah, Water Resources Program Manager, Nooksack Indian Tribe*
	Meeting Logistics (8:40–8:45 a.m.) *Becky Peterson, Geneva Consulting*
	Project Overview (8:45–9:00 a.m.) *Steve Klein, Research Forester, EPA ORD-Corvallis*
9:00 a.m.–10:30 a.m.	***Science/Policy Integration***
	Climate Change Primer (9:00–9:30 a.m.) *Guillaume Mauger, Research Scientist, CIG*
	CWA SFNR Temperature TMDL (9:30–10:00 a.m.) *Steve Hood, Teizeen Mohamedali, DOE Bellingham Field Office*
	ESA Salmon Recovery Plan WRIA1 - Overview (10:00–10:30 a.m.) *Treva Coe, Restoration Program Manager, Nooksack Natural Resources* *Alan Chapman, ESA Coordinator, Lummi Natural Resources*
10:30 a.m. – 10:45 a.m.	**Break**
10:45 a.m. – 11:45 a.m.	***Understanding the Physical Setting - South Fork Nooksack River System***
	Geology, Geomorphology, and Channel Morphology of the South Fork Nooksack River (10:45-11:05 a.m.) *Mike Maudlin, Geomorphologist, Nooksack Indian Tribe* *John Thompson, Whatcom County Public Works*
	Hydrology of the South Fork Nooksack River (11:05-11:25 a.m.) *Andy Gendaszek, Hydrologist, USGS*
	Integrated discussion of the Physical Setting (11:25-11:45 a.m.) *Mike Maudlin, Geomorphologist, Nooksack Indian Tribe* *John Thompson, Whatcom County Public Works* *Andy Gendaszek, Hydrologist, USGS*
11:45 a.m. – 12:15 p.m.	**Restoring Salmon Habitat For a Changing Climate - Overview (11:45 a.m.-12:15 p.m.)** *Tim Beechie, Research Scientist, NOAA Fisheries, NW Fisheries Science Center-Seattle*
12:15 p.m. – 1:15 p.m.	**Lunch – on your own**

1:15 p.m. – 1:45 p.m.	**NorWeST – A Regional Stream Temperature Model & Thermal Habitat Assessments (1:15 p.m.-1:45 p.m.)** *Dan Isaak, USFS Rocky Mountain Forest Range Laboratory, Boise, ID*
1:45 p.m. – 2:45 p.m.	***Watershed Condition, Land Use, Salmonid Presence, Habitat Quality, and Limiting Factors in the South Fork Nooksack River***
	Watershed Condition and Land Use (1:45-2:15 p.m.) *Mike Maudlin, Geomorphologist, Nooksack Indian Tribe* *Steve Hood, DOE Bellingham Field Office*
	Salmonid Presence, Life Histories, Quality of Habitat, Limiting Factors (2:15-2:45 p.m.) *Ned Currence, Fisheries/Resource Protection Manager, Nooksack Natural Resources*
2:45 p.m. – 4:15 p.m.	***Climate Change Impacts in the South Fork Nooksack River***
	Panel #1 - Climate Change Impacts I: Hydrology and Channel Morphology (2:45-3:05 p.m.) *Robert Mitchell, Professor, Western Washington University* *Tim Beechie, Research Scientist, NOAA Fisheries, Seattle* *Andy Gendaszek, Hydrologist, USGS*
	Panel #1 Q&A: (3:05–3:15 p.m.) *Becky Peterson, Workshop Facilitator, Geneva Consulting*
3:15-3:30 p.m.	**Break**
	Panel #2 - Climate Change Impacts II: Salmon and Salmon Habitat (3:30-4:00 p.m.) *Tim Beechie, Research Scientist, NOAA Fisheries, Seattle* *Ned Currence, Fisheries/Resource Protection Manager, Nooksack Natural Resources*
	Panel #2 Q&A: (4:00–4:15 p.m.) *Becky Peterson, Workshop Facilitator, Geneva Consulting*
4:15-4:30 p.m.	**Day 1 Workshop Wrap-up and Next Steps (4:15–4:30 p.m.)** *Steve Klein, Research Forester, EPA ORD-Corvallis*

Day 2 Agenda–January 23, 2013- Working The Problem, Restoring Salmon Habitat For A Changing Climate In the South Fork Nooksack River, WA

Time	Session Title/Time/Person
8:30 a.m.–9:00 a.m.	***Welcome and Day 2 Workshop Overview***
	Welcome (8:30–8:35 a.m.) *Oliver Grah, Water Resources Program Manager, Nooksack Indian Tribe*
	Meeting Logistics (8:35–8:40 a.m.) *Becky Peterson, Geneva Consulting*
	Working The Problem, Salmon Habitat Restoration in the Face of Climate Change - Overview (8:40–9:00 a.m.) *Steve Klein, Research Forester, EPA ORD-Corvallis*
9:00 a.m.–10:00 a.m.	***Applying the Climate Change Context To Existing ESA Recovery Plans***
	Restoring Salmon Habitat For a Changing Climate – Restoration Actions and Decision Making Process (9:00 a.m.-9:30 a.m.) *Tim Beechie, Research Scientist, NOAA Fisheries, Seattle*
	ESA Salmon Recovery Plan and Ten-Year Action Plan: Strategies and Stream Restoration Actions (9:30–10:00 a.m.) *Treva Coe, Restoration Program Manager, Nooksack Natural Resources*
10:00 a.m. – 10:15 a.m.	**Break**
10:15 a.m. – 12:00 p.m.	***ESA Listed Species and Current Restoration Strategies***
	ESA Listed Species (Spring Chinook, Summer Steelhead and Bull Trout) Life Histories, Habitat Utilization and Spatial Distribution, Quality of Habitat and Limiting Factors (10:15-11:15 a.m.) *Ned Currence, Fisheries/Resource Protection Manager, Nooksack Natural Resources* *Steve Seymour, Retired WDFW Fisheries Scientist*
	Current South Fork Restoration Strategies (11:15-12:00 p.m.) *Treva Coe, Restoration Program Manager, Nooksack Natural Resources* *Jill Komoto, Restoration Program Manager, Lummi Natural Resources*
12:00 p.m. – 1:00 p.m.	**Lunch – on your own**

1:00 p.m. – 3:00 p.m.	***Climate Change Risks and Salmon Recovery Actions***
	Temperature Effects and Restoration Strategies (1:00-1:30 p.m.) *Discussion Leader: Steve Klein, Research Forester, EPA ORD-Corvallis*
	Low Flow and High Flow Effects and Restoration Strategies (1:30-2:15 p.m.) *Discussion Leader: Oliver Grah, Water Resources Program Manager, Nooksack Natural Resources*
	Salmon Diversity and Resilience Under Climate Change (2:15-3:00 p.m.) *Discussion Leader: Tim Beechie, Research Scientist, NOAA Fisheries, Seattle*
3:00 p.m.-3:15 p.m.	**Break**
3:15 p.m. – 4:15 p.m.	***Climate Change Influences on Salmon Restoration Strategies***
	Effectiveness of Restoration Strategies in the Face of Climate Change (2:45-3:15 p.m.) *Discussion Leader: Tim Beechie, Research Scientist, NOAA Fisheries, Seattle*
	Prioritization of Restoration Strategies in the Face of Climate Change (3:15-3:45 p.m.) *Discussion Leader: Steve Klein, Research Forester, EPA ORD-Corvallis*
3:45 p.m.-4:15 p.m.	**Developing an Effective Restoration Plan in the Face of Climate Change; Facilitated Discussion – Workshop Attendees (3:45–*4*:15 p.m.)** *Becky Peterson, Workshop Facilitator, Geneva Consulting* *Oliver Grah, Water Resources Program Manager, Nooksack Indian Tribe* *Steve Klein, Research Forester, EPA ORD-Corvallis*
4:15-4:30 p.m.	**Day 2 Workshop Wrap-up and Next Steps (4:15–*4*:30 p.m.)** *Steve Klein, Research Forester, EPA ORD-Corvallis*